

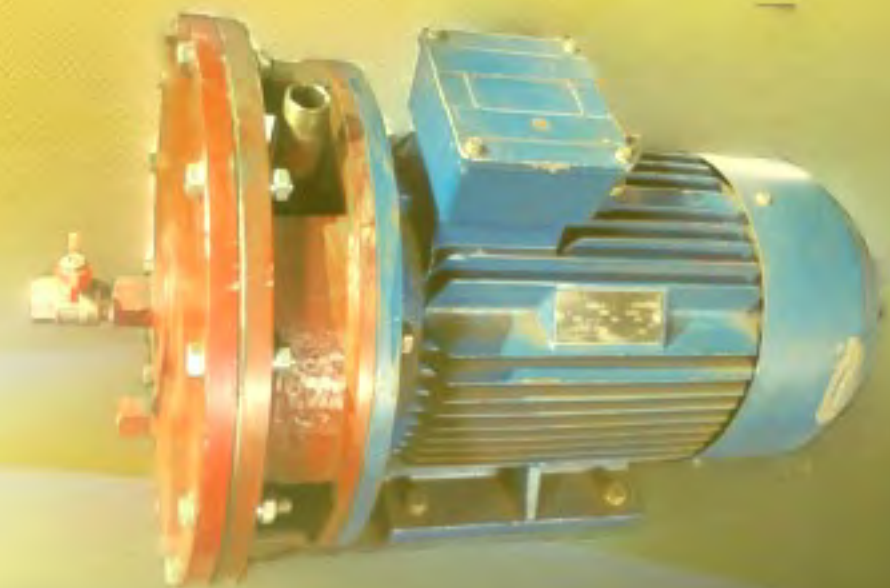
Laboratory of alternative energy GverLab

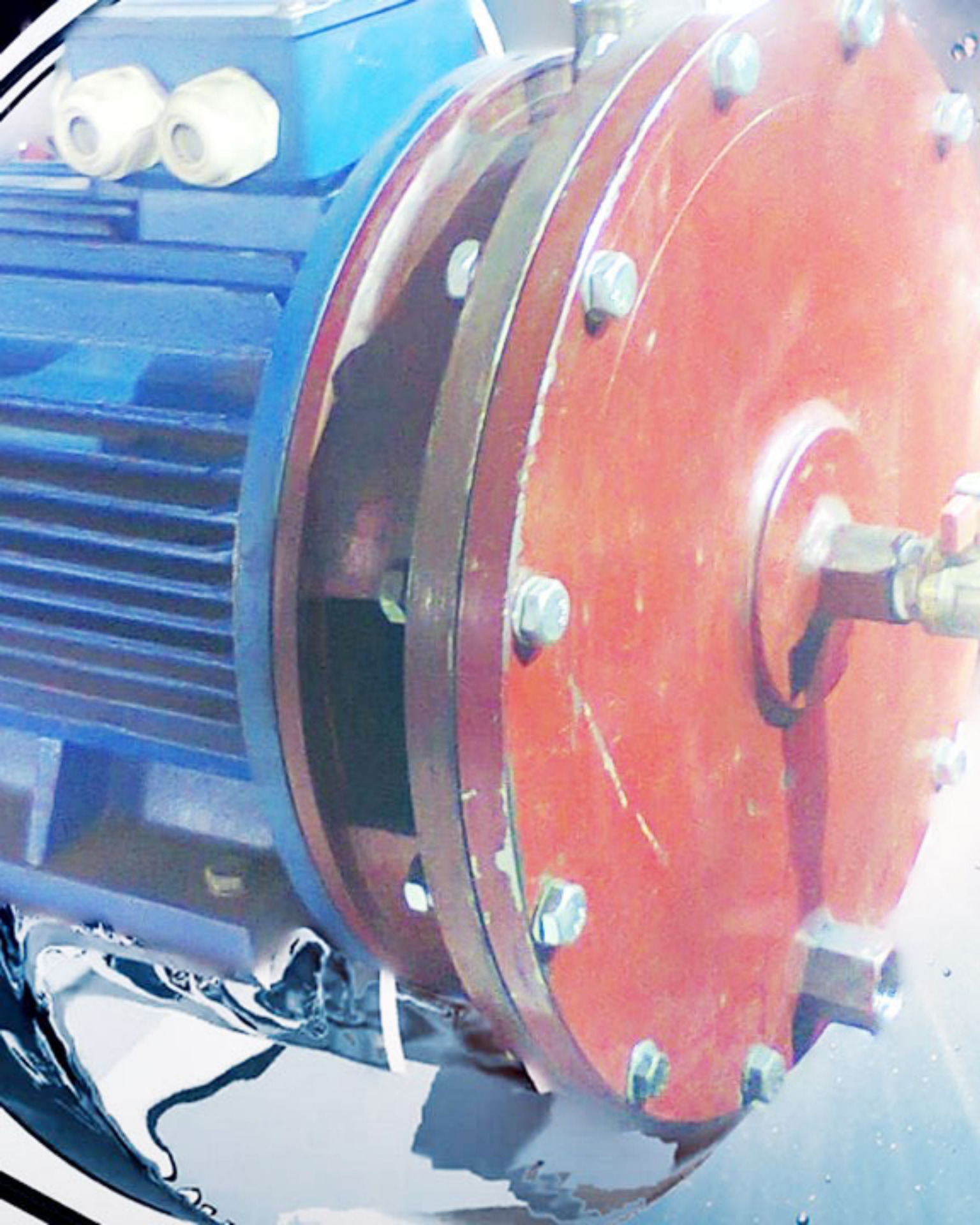
Cavitation hydrodynamic rotary device Gver011

For producing heat, composite liquid fuel, mixtures

Presentation and description

Ukraine 2023





Main characteristics

<i>Motor</i>	<i>- 11 kW, 3000 rpm</i>
<i>Produced heat</i>	<i>- 10600 ccal/H</i>
<i>Generator weight</i>	<i>- 36 kg</i>
<i>Motor weight</i>	<i>- 74 kg</i>
<i>Overall dimensions of the device:</i>	
<i>Length</i>	<i>- 545 mm</i>
<i>Width</i>	<i>- 394 mm</i>
<i>Height</i>	<i>- 419 mm</i>
<i>Total weight</i>	<i>- 109,7 kg</i>
<i>Max fluid temperature - 95 degrees C</i>	
<i>Hot water pumping performance -3 m3/H</i>	
<i>Steel - Corrosion-resistant heat-resistant stainless steel AISI 409, 410S</i>	
<i>The warranty period - 10 years</i>	

Principle of action and main advantages

Cavitation hydrodynamic rotary device Gver011 uses hydrodynamic cavitation and friction during rotor rotation for an heating of the liquids as well as for mixing and homogenization various liquid fuels with a water, liquid components for the formation of stable, finely dispersed emulsions.

Designed on the basis of classical Griggs cavitation rotary heat generators

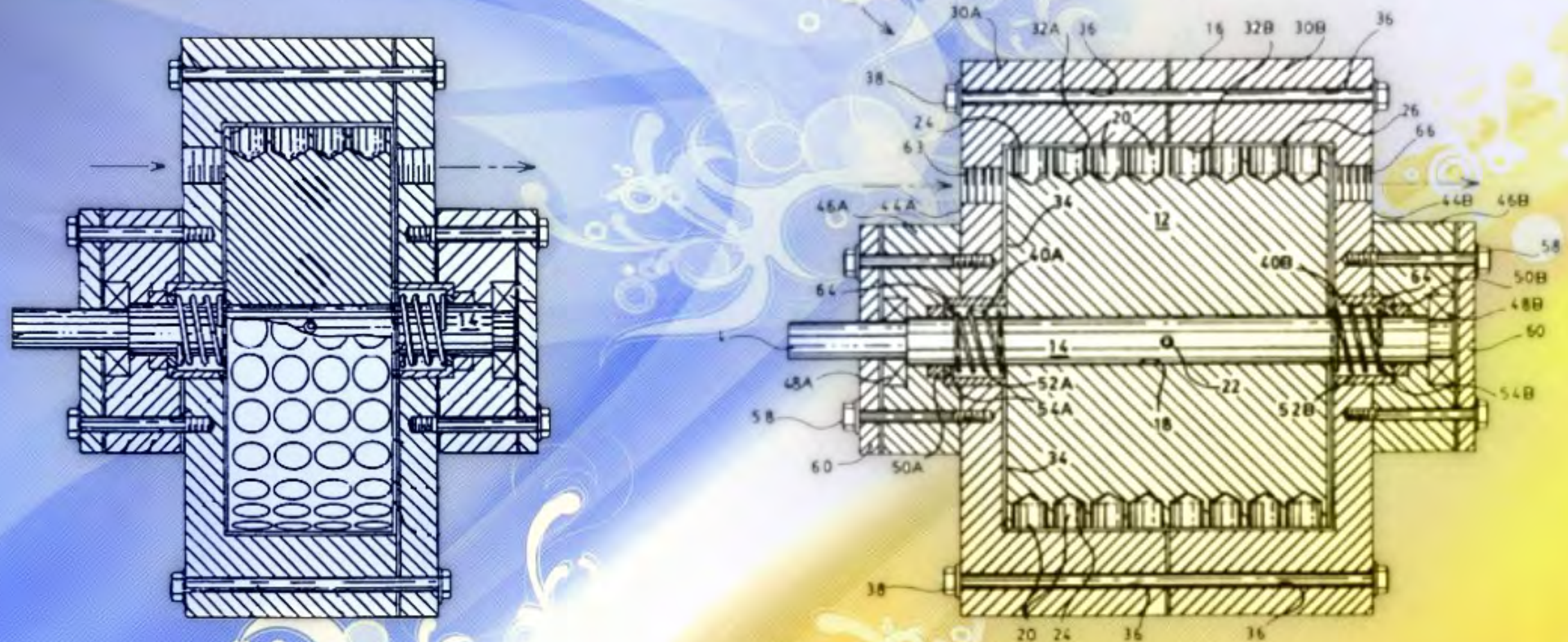
The main advantages such heat machines over the standard ones are as follows:

- higher efficiency*
- ecologically absolutely clean, without harmful emissions into the atmosphere*
- compactness*
- economy*
- ease of manufacture and operation*
- safe operation during operation.*

In addition, our device Gver011 makes it possible to produce a variety of stable liquid fuel mixtures (emulsions, composite fuel) based on water, oil, waste oil .

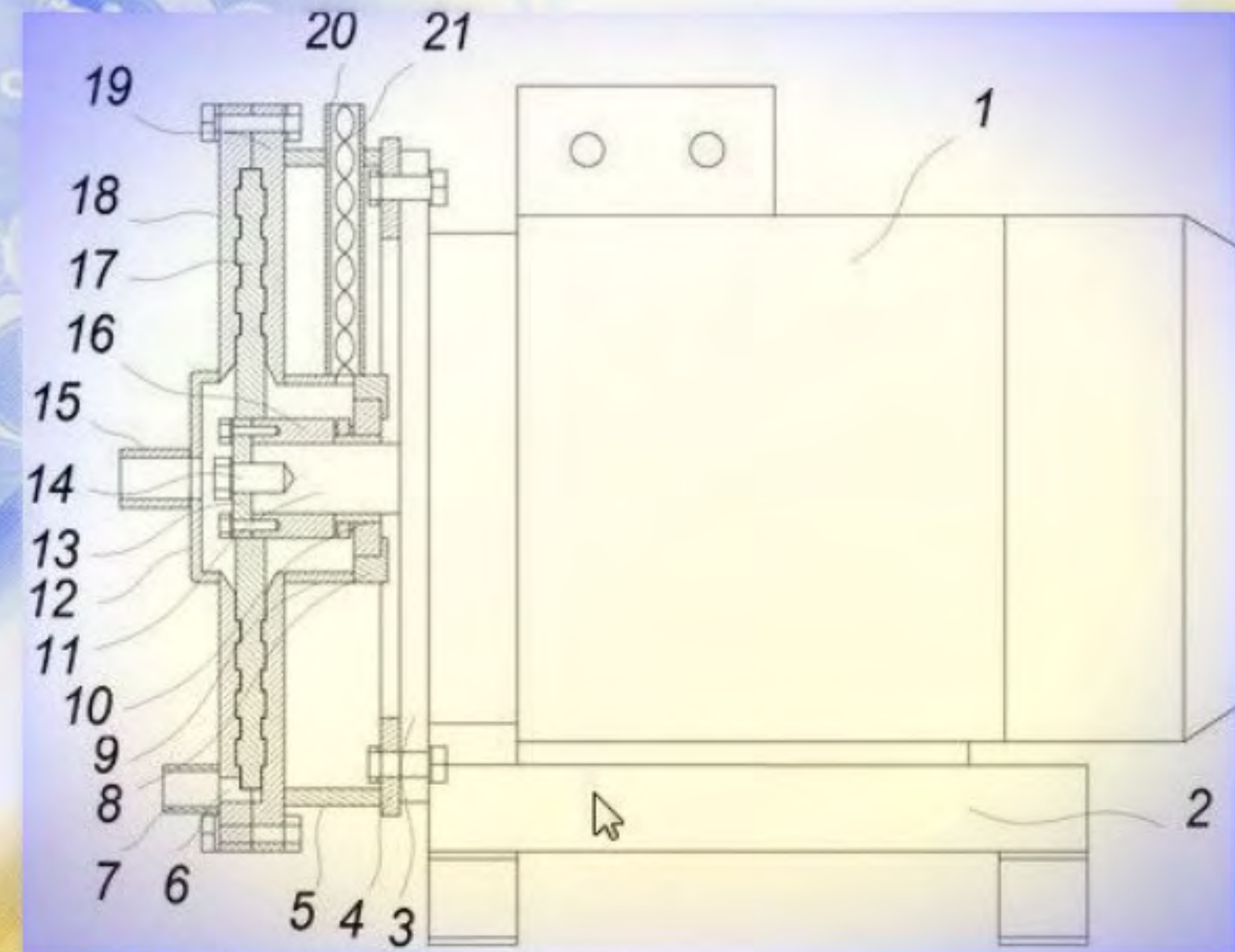
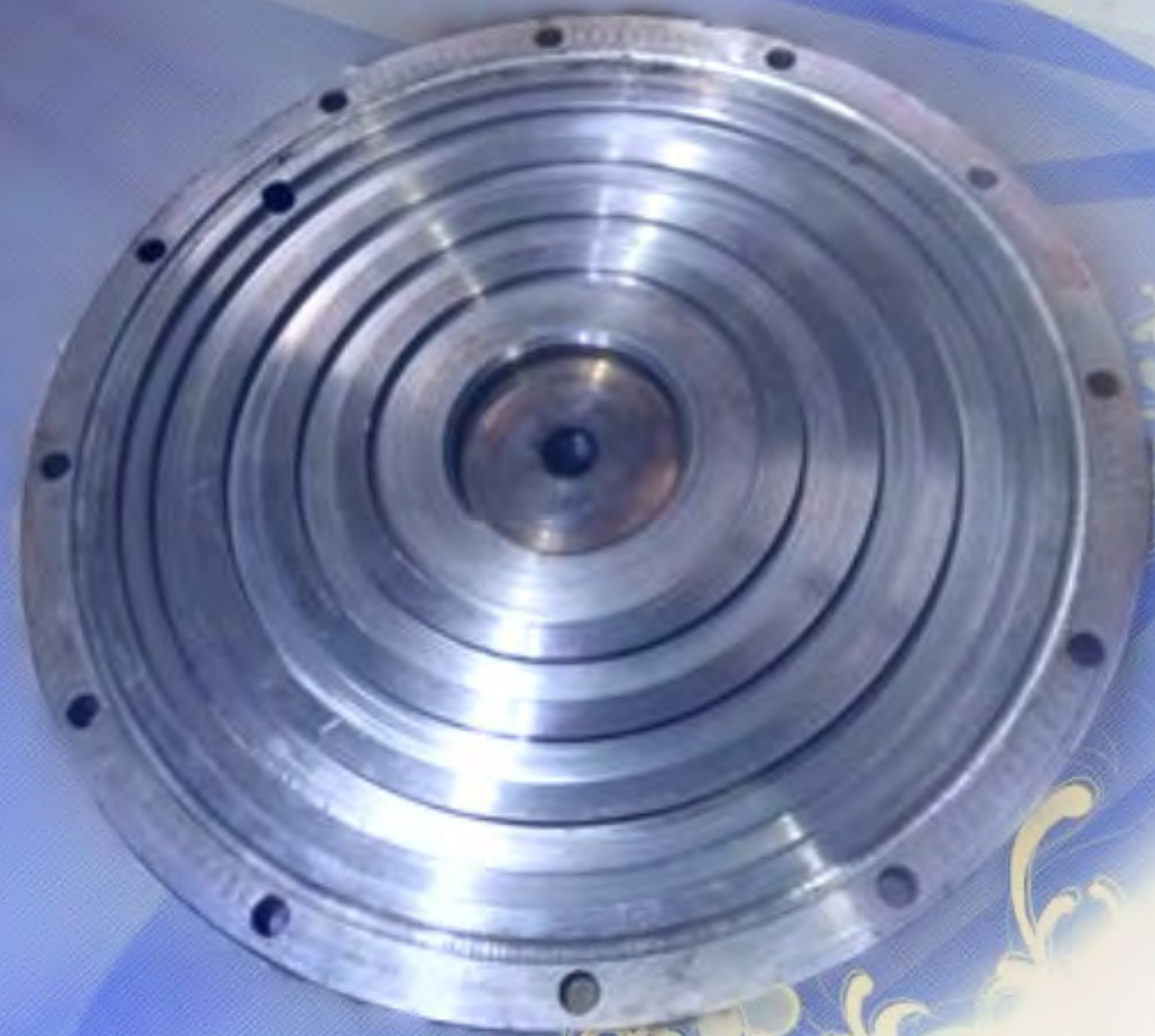
These emulsions burn well with minimal harmful emissions into the environment.

Explanatory drawings and a short description from the likefrom the patent US5188090A by James L. Griggs



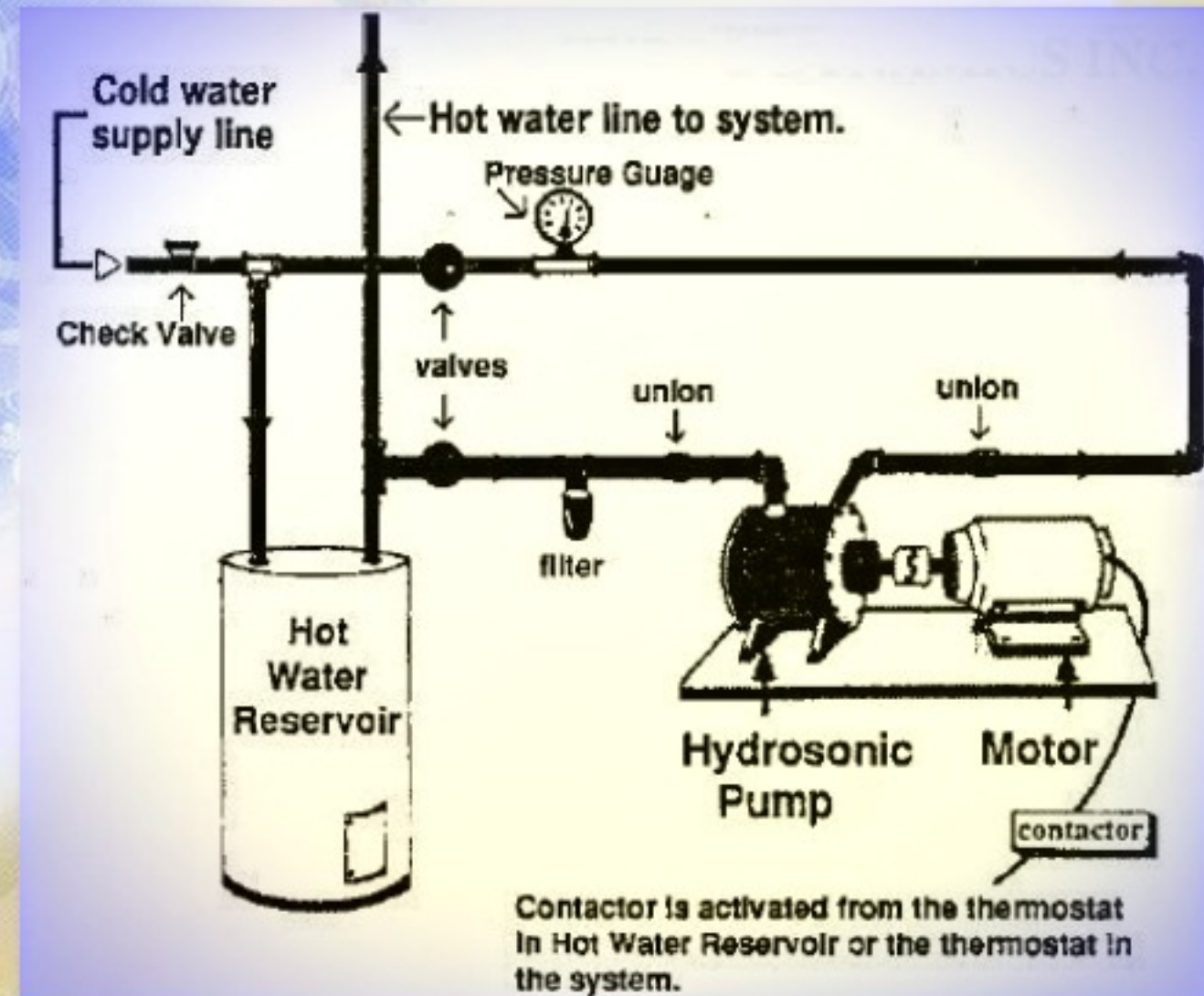
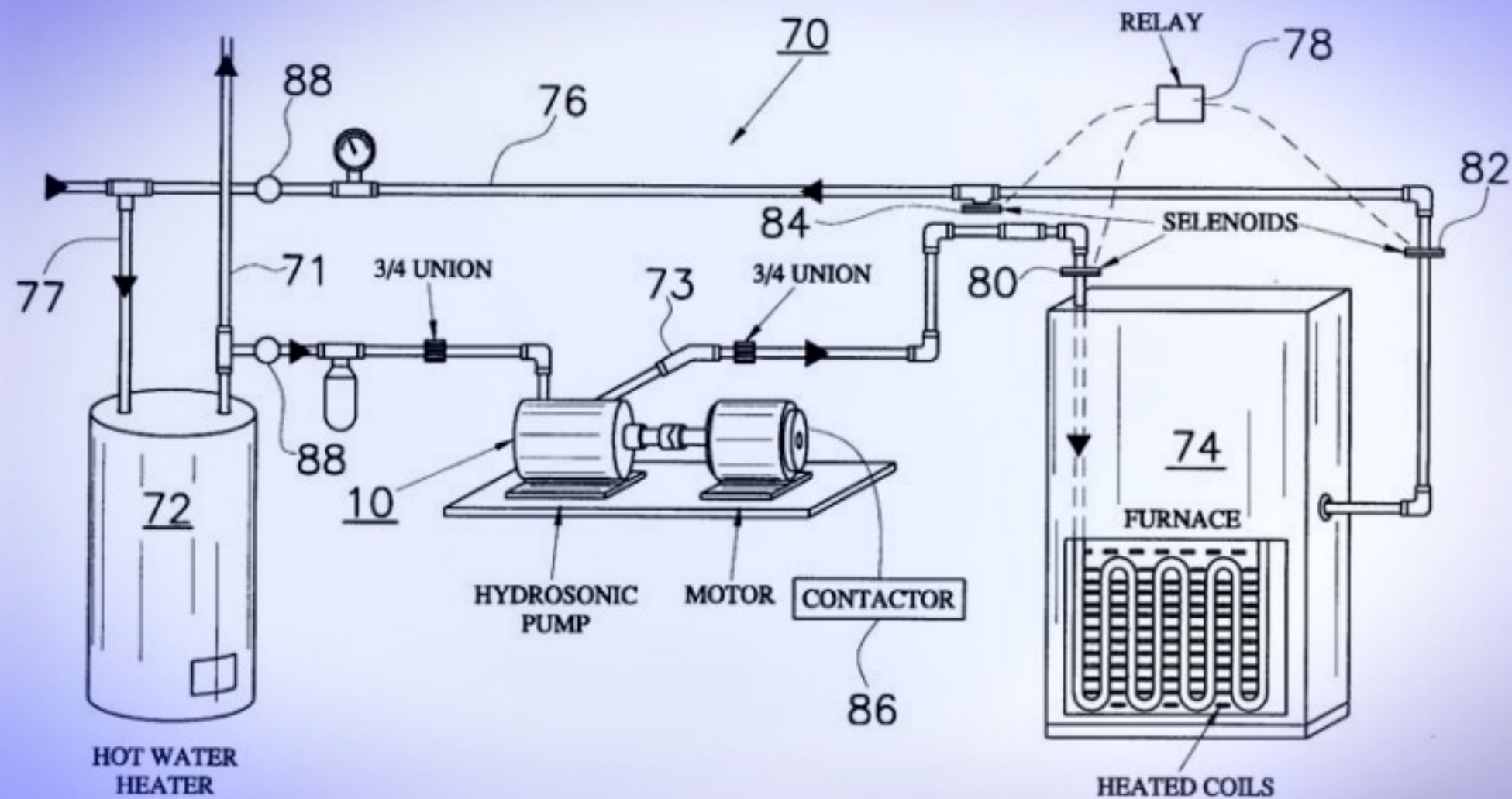
Devices for heating fluids. The devices employ a cylindrical rotor which features surface irregularities. The rotor rides a shaft which is driven by external power means. Fluid injected into the device is subjected to relative motion between the rotor and the device housing, and exits the device at increased pressure and/or temperature.

The device is thermodynamically highly efficient, despite the structural and mechanical simplicity of the rotor and other compounds. Such devices accordingly provide efficient, simply, inexpensive and reliable sources of heated water and other fluids for residential and industrial use.



The photo of part of our device and short description from our patent

1 – motor, 19 – rear part of housing (photo), 17 – rotary disk, 18 – front disk of housing, 20 – a pipe for water feed in, 7 – outlet for hot water or emulsion, 15 – additional entry



Technological schemes for connecting a cavitation rotary heater–mixer



The next important application of our device is the production of water–fuel emulsions (composite fuel)

Water emulsion fuel – theory and practice.

On the basis of many theoretical and experimental studies (including the use of our device), there is an opportunity using the cavitation effect to obtain a highly dispersed and homogeneous water–fuel emulsion of VTE (a mixture of fuel oil and water) fraction which falls short of the standard "mix gasoline". For the manufacture of VTE asked to use structured water the resulting electromagnetic effects. Proposed structural parameters of combustion of VTE with optimal heat technical and environmental characteristics.

Emulsified liquid fuel burns much faster than anhydrous; the content of up to 30% of water in emulsified fuel does not deteriorate, but even intensifies the burning process due to additional internal fuel crushing of droplets, increase in surface area of evaporation of particles and improvement mixing fuel with air.

Reducing the burning time of emulsified fuel has a beneficial effect at the stage of burning sooty residues, improves the overall completeness of fuel combustion and reduces soot deposits on working surfaces.

In order for the water heater to burn, it is necessary to structure the water from fuel, or well–mixed water with suspended fine particles of hydrocarbon fuel, feed into the furnace chamber a device in which there is a fine steel mesh. Thus, so that the mixture sprays on the grid. At the initial stage, it is necessary heat the grid, at least to 650 degrees Celsius, and better to 800–900. Then, by spraying the mixture on the hot grid, stable combustion will be carried out, with release of a large amount of heat and superheated steam, which we use either as a heat carrier or as a working body for heating The steel mesh serves primarily as a catalyst for thermo–decomposition of water, and secondly, a source of heat for the ignition of molecules hydrocarbon.

You can get a structured water–fuel emulsion using the cavitation effect. Cavitation technology allows ensure mutual mixing of immiscible liquids and get highly stable and highly dispersed, no fuel mixtures that are flaking for a long time.

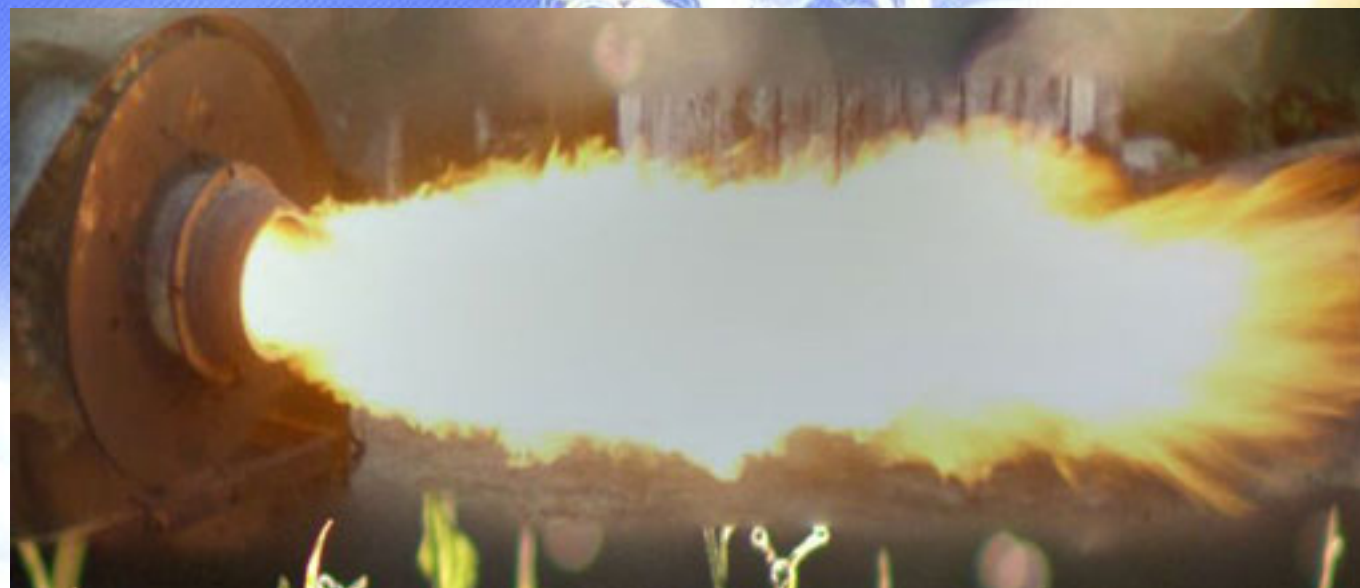
Carbon fuel due to dispersion and cavitation effect turns into a homogeneous suspension in which they are completely mixed all fractions, as well as added water.

The best results in terms of speed structuring, obtained at a liquid temperature in the range of 35–42 degrees Celsius.

Water–fuel emulsion allows you to save a lot of scarce fuel. The use of emulsion allows you to intensify the burning process, reduce the formation of soot and various deposits, as on the walls chambers of the combustion device, as well as on the nozzle.

Water treated in a vortex cavitator will not for deposits in channels, and destroys old deposits. With cavitation processed liquid environment, complex physical and chemical processes take place in it processes.

The resulting water–fuel emulsion is tested and used for burning it using our innovative 1 MW burner:



Examples of our device Gver011 applications and benefits - as a cavitation mixer.

Use our device for pre-emulsions in combination with high pressure homogenisation has significant potential for improved quality at lower pressure and fewer passes.

Gver011 is a new breakthrough technology for very efficient microscopic mixing and scale-free heating based on hydrodynamic cavitation.

Gver011 has a number of multiple functions and features that benefit :

- in food and beverage processing,
- egg processing,
- hydration of hydrocolloids and proteins,
- scale free heating in food & beverage,
- mayonnaise and salad dressing production,
- ketchup and barbeque sauce production,
- ice cream mix production,
- brewery, beverage and RTD processing,
- meat, poultry and seafood and pet food
- toothpaste production.

For example – A key challenge in high-viscosity products like toothpaste is to ensure an efficient microscopic mixing, hydration, dispersion and homogenisation to produce uniform and appealing product appearance and consistency. Lower systems pressure and shorter and more efficient CIP cycles are other challenges in toothpaste production. Cavitation mixing offers a wide range of benefits to the personal care industry that meet the needs of our customers.

The creative team of engineers, scientists, inventors and business partners of the Laboratory of Alternative Energy GVERLAB invites interested persons and companies to cooperate for joint further development and improvement, development, manufacture and implementation of energy-saving devices.

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